A Study of Qualitative Research and Quantitative Research

Noriko Kimura*

Abstract

New methods and tools have been developed and the landscape of research has changed in TESOL, second language acquisition and applied linguistics. As research methodologies have become complex, the principles of undertaking and reporting research have become obscure. In this article, the assumptions and definitions underlying both qualitative and quantitative research, which have been major research methods in TESOL and the related fields for a long time, are reconsidered.

Introduction

A growing number of specialized research methods have appeared and they have been encouraged to be employed in TESOL, second language acquisition, applied linguistics and the related fields. Among those research methods, qualitative and quantitative research have most frequently been used until now. However, it is doubtful whether the assumptions and definitions underlying both methods are understood clearly. One of the reasons of their obscurity may lie in the fact that research methodologies have eventually developed but few textbooks or articles concerning, particularly, qualitative research have been written (Chapelle et al., 2003). Besides, there still seems to be the lack of consensus on and the misunderstandings about what qualitative and quantitative research are. Consequently, both qualitative and quantitative research will be reconsidered and discussed in this article.

Research Categories

There are two basic categories of research. One of which is secondary research and the other is primary research.

Secondary research comprises any research based on secondary sources and it is further subdivided into library research and literature reviews. Library research includes any research done for a school or university course, ordinarily in the form of a term paper. Literature review comprises any research based on the literature and this is a written summary

*School of Social Information Studies, Otsuma Women's University (Part-time lecturer)

and analysis of research precedents to a particular new research study.

Primary research comprises any research founded on primary or original data and it is further divided into qualitative, statistical and survey research. They are commonly defined as follows.

Qualitative research is founded predominantly on non-numerical data and this data is collected by using qualitative research techniques such as case studies, observations, field notes, diaries and so forth. (Sometimes this research also uses interviews and questionnaires which are categorized as survey research technique.)

Statistical (=quantitative) research is based predominantly on numerical data and this research includes descriptive research, exploratory research, quasi-experimental research and experimental research.

Survey research is subdivided into interview research, which gathers data face to face using question-and-answer formats, and questionnaire research, which collects data employing paper-and-pencil or computer-delivered question-and-answer formats.

Incidentally, some researchers say that the line dividing qualitative and quantitative (= statistical) research is not at all clear and they also argue that the qualitative/quantitative distinction is an oversimplification. Because both qualitative and quantitative research can be joined in many research types. As was mentioned above, qualitative research sometimes uses the techniques categorized as survey research ones. These survey techniques, interviews and questionnaires can present open-response questions to collect non-numerical data or closed-response questions to collect numerical data so that they are used in both qualitative and quantitative research. Moreover, qualitative research also uses numbers and some quantitative research may use non-numerical data.

Quantitative Research

Descriptive research

This research, which is included in quantitative research, is any research that describes a sample in numerical terms. The research is done by deciding the survey focus first and then by devising survey instruments. The instruments used usually in this research are interviews, questionnaires, experiment and so on.

After numerical data is compiled, it is analyzed and described in terms of frequencies or percentages, or is shown in graphs or charts. Descriptive statistics are also used to characterize or summarize data in terms of central tendency and/or to show how a set of numbers disperse, or diversify, around the center.

Frequencies (tallies) are used to find the sum of the number of things or people in different categories. The actual counts or tallies are called raw frequencies and they can be changed into percentages. Percentages are values which are calculated by dividing the total number in one category by the total number in all categories and multiplying the result by 100.

A graphical display is another way of showing frequencies or percentage data. Graphing data can take many forms and typical ones are histograms and pie charts. In *histograms*, each numerical possibility in a set of data is indicated along the horizontal axis and frequencies are indicated on the vertical axis. The frequency of each number in the data is commonly represented in histograms by asterisks, stacks of Xs and so forth in columns.

A pie chart is a graph in the shape of a circle which shows the proportions or percentages of subcategories of a whole in proportionally sized wedges. Histograms may be more useful than pie charts when the number of categories is large or the scale is continuous. While, pie charts may be clearer when the number of categories is small.

Central tendency can be defined as the inclination of a set of numbers to cluster around a particular middle value and it is often found by using the mean, the mode and the median. *The mean*, which is also called the average, is the sum of all the values in a distribution divided by the number of values. *The mode* is the value that occurs most frequently in a set of numbers. *The median* is the point in the distribution above which 50% of the values lie and below which 50% lie.

Dispersion is the degree to which the individual numbers in a set vary away from the central tendency and it is primarily estimated using the low–high, the range and the standard deviation. *The low–high* is the highest value and the lowest value in a set of numbers. *The range* is the highest value minus the lowest value plus one. *The standard deviation* is a sort of average of the differences of all scores from the mean.

A standard deviation, a sort of average of the differences of all scores from the mean, can be a useful way of describing the dispersion of the scores in any set of values that form a normal distribution. *A normal distribution* is a set of numbers distributed symmetrically around a mean and it is also known as *a bell curve*.

Correlational research

This research involves collecting and compiling data and then calculating a statistic called a correlation coefficient. *Correlation coefficients* indicate the degree of relationship between two sets of numbers represented as the ratio of the matching to total score variation. Correlation coefficients can range from 0.00 to 1.00. They show the fact that if the ratio is zero, it indicates absolutely no relationship, while if the ratio is perfect, it indicates that there is a 100% relationship and that both sets of numbers are going in the same direction. Correlation coefficients include the Pearson r, Spearman rho and the pie coefficient.

Quasi-experimental research and true experimental study

"Many people assume that the most appropriate way to resolve a question about language learning or teaching is to conduct an experiment."(Brown & Rodgers. 2002, p. 195) *A quasi–experimental research* is a research study that compares group behavior in probabilistic terms under controlled conditions using intact groups, which is a set of research subjects pre–existing as a group prior to the research study.

On the other hand, *a true experimental study* is a study that compares behavior in two groups of participants who have been randomly selected and assigned to control and treatment groups and then given control and experimental treatments. A change in behavior is measured by pre– and post–tests on both groups.

Quantitative research evaluation

Quantitative research is often judged in terms of validity, reliability and objectivity.

Validity is defined as 'the degree to which the results can be accurately interpreted and effectively generalized'. (Brown 1997) The degree to which the results can be accurately

interpreted is ordinarily called internal validity and the one to which the results can be generalized is ordinarily labeled external validity.

Reliability is a concept that can be viewed in internal and external terms and it is defined as the degree to which the results of a study are consistent. *Internal reliability* is the degree to which we can expect consistent results if the data for the study were re-analyzed by another researcher. While, *external reliability* is the degree to which we can expect consistent results if the study were repeated.

Objectivity is defined as the observation based on facts, and freeing from personal feelings or prejudice. Objectivity is a relative concept which is usually contrasted with subjectivity, but it also depends on the scale of observation.

Qualitative Research

As was mentioned previously, qualitative research is any research based predominantly on non-numerical data. According to Holliday (2002), this research can develop from experiences and issues from life and work contexts. The research possibilities are so open, unstructured and uninhibited that there is a possibility to be said that there is no strictness and accountability to qualitative research. Therefore, showing the workings of the research is not only necessary to report findings to the world as the ultimate goal of research, but is it also necessary for the accountability of qualitative research.

Format

The format (structure), which is commonly used to report the results of research, is as follows.

Abstract

I Introduction
- A Literature review---A good literature review provides both the context and the justification for the new study. Therefore, carrying out a thorough review of the literature is an important part of designing research project.
- B Purpose---a statement of the purpose of the study including research questions or hypotheses

II Methods
- A Participants---a description of how the participants were selected and of their apposite characteristics
- B Materials---a description of any tests, questionnaires, teaching materials, etc. and why they were reliable and valid for use in the study

III Results ---a straightforward technical report of what the results of the study were in tables and figures of various types as appropriate

IV Discussion ---an explanation of the results including direct answers to the research questions

V Conclusions ---a discussion of the theoretical and practical implications of the study as well as its limitations, and suggestions for future research

References

Appendices

Tables

(Cf. Brown & Rodgers, 2002)

Case study research

This research includes an intensive study or observation of the background, current status,

and environmental interactions of a given social unit such as an individual, a group, an institution or a community. Case studies in language education research often involve following the development of the language competence of an individual or small group of individuals. Therefore, case study research is developmental studies, which comprise investigations of patterns and sequences of growth and changes over time, as well.

Qualitative research techniques

The most common method used for data collections is note taking. Corsaro (1983) identified four categories for the method. They are field notes, methodological notes, theoretical notes and personal notes. *Field notes* are direct observations of what researchers are seeing in their classrooms or research sites. *Methodological* notes are observations involving the research methods researchers are using. *Theoretical notes* are notations involving theories about what is happening in the field. Personal notes are references involving events in researchers' lives or in the lives of their students that may affect what they are seeing. Another techniques are interviews, questionnaires, teaching journals and so forth.

Classroom research

The term classroom covers a wide range of learning contexts such as classes in schools, multi-media labs, distance learning situations, one-to-one tutoring, on-the-job training, computer-based instruction etc. and classroom research often refers to an interaction research study.

Most classroom interaction research studies are done in regular school classrooms and their focuses are on interactions between teachers and learners or between learners and learners.

Most of focus of classroom interaction studies have been on *the teachers' interaction with learners* and some principal topics of interest have been teacher question, teacher error corrections, quantity of teacher speech, teacher explanations and teacher wait-time for student responses.

The other major type of classroom interaction is *the learner-to-learner interaction* and increasing emphasis is placed on *cooperative learning*, which is group learning activity (pair work is also included).

Data are typically collected by tape-recordings or video-recordings, note-takings and/or partial transcriptions during data collection. Those data are compiled for analysis by transcribing from the tape/video recordings and interleaving notes and transcriptions at the time of data collection.

Research techniques that have been employed include diaries, journals, field notes, interviews, questionnaires, action research, case studies and so on.

Qualitative research evaluation

Qualitative research also views the concepts of validity and reliability valuable but it is judged using other terms such as credibility, transferability, dependability and confirm-ability. *Credibility* is the believability of the results and it is roughly analogous to the concept of internal validity. *Transferability* is the degree to which the results of qualitative research could be applied to other settings and it is loosely analogous to the concept of external validity. *Dependability* is the consistency of the results of qualitative research or the degree to

which the results can be trusted and it is roughly analogous to the concept of reliability. *Confirmability* is the degree to which qualitative results are or could be corroborated and it is roughly analogous to objectivity.

Conclusion

Both qualitative and quantitative research have been discussed and described in this article. As Chaudron (1986) claims, the objectives of research are "to determine which classroom processes are most conductive to learning outcomes" and "to discover why these relationships exist." In order to attain those objectives, employing both qualitative and quantitative research must be favorable. Because as many researchers acknowledge, quantitative research is useful in terms of data collection and analysis and qualitative research is important, particularly, when reliability and credibility of research are measured.

Primary Sources

Brown, J. D. & T. S. Rodgers. (2002). *Doing Second Language Research*. Oxford: Oxford University Press.

Bibliography

Atkinson, D. et al. (2003). Some guidelines for conducting quantitative and qualitative research in TESOL. In Chapelle, C. A. & P. A. Duff (ed.), *TESOL Quarterly*, 37, 157–177.

Chaudron, C. (1986). The interaction of quantitative and qualitative approaches to research: A view of the second language classroom. *TESOL Quarterly*, 20, 709–717

Holliday, A. (2002). *Doing and Writing Qualitative Research*. London: SAGE Publications.

Lazaraton, A. (1995). Qualitative research in applied linguistics: A progress report. *TESOL Quarterly*, 29, 455–471,

Shaqoury Hubbard, R. & B. M. Power. (1993). *The Art of Classroom Inquiry*: A handbook for teacher–researchers. Heinemann.